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An Introduction to the Revised NR 149- Part I

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WDNR Laboratory Certification
& Registration Program
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Welcome

Part I of this presentation covers Subchapters I-VI of the revised NR 149. Please refer to Part II for Subchapter VII- Quality Systems and the analytical batch examples.

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Why Revise NR 149?

- Last substantial revision was in 1994
- Current 149 language conflicts with covered program codes
- Regulated community supported revision of NR149, but not adoption of NELAC

The Department has a statutory obligation to keep current with national trends.

The current version of NR 149 put in same format as the green sheet is roughly 30 pages in length.

Tables in the appendices comprise half of the bulk– the remaining section will be around half of the length when formatted as “code”.

We will make available a “Digest” version of the proposed Code. The Digest will highlight requirements for smaller WWTP-laboratories.

Other materials under development include, model benchsheets, sample logsheets, templates for SOPs and the Quality Manual, and guidance for demonstrating sample container cleanliness.

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NR 149 Revision Advisory Committee (RAC)

Laboratory Certification Standards Review Council
Stakeholders

- DATCP
- Environmental Consultant
- Municipal Environmental Group
- WI Environmental Laboratory Association (WELA)
- WI Paper Council

15 Meetings

- Concepts not language for 6 of 7 subchapters
- Quality Systems- interactive development process

RAC meetings started in January 2002 and finished in November 2003

The RAC reviewed the Quality Systems subchapter in detail.

The RAC reviewed a complete draft of the proposed chapter in August 2004.

The RAC directed us to use the good parts of other certification and registration programs, including NELAC, as the basis for modifications.

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NR 149

What Happens Next?

Public Hearings

March 23-April 6 in five cities

Submit written comments by April 14, 2006

Comments compiled and addressed by WDNR

Modifications to current draft, where necessary

Resubmit draft to Natural Resources Board

Legislative review after NRB adoption

Effective date

No sooner than 120 days after legislative approval

Public hearings will be held in:

Eau Claire, March 23

Wausau, March 28

Waukesha, March 29

Green Bay, March 30, and

Dodgeville, April 6.

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“New and Improved NR 149”

7 Subchapters

- I. General Provisions
- II. Program Administration
- III. Program Structure
- IV. Certification and Registration Process
- V. Proficiency Testing
- VI. On-Site Evaluations
- VII. Quality Systems

Three Appendices

- I. Analytical Techniques, Analytes & Analyte Groups for Certification & Registration in Aqueous and Solid Matrices
- II. Methods, Analytes & Analyte Groups for Certification in the Safe Drinking Water Matrix
- III. Authoritative Sources

49 pages of the draft are the appendices

The current NR 149, in approximately same format as draft is nearly 30 pages, gives very little specificity for quality assurance and control, and does not identify analytes available for certification or registration.

This proposal is organized topically in subchapters and makes it easier to locate needed information.

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“New and Improved NR 149”

No additional covered programs

Eliminated redundancies

Reorganized- subchapters capture all relevant material to single topic

By consolidating all information related to a single topic navigation of requirements, say for PTs, is now much easier. Previously you had to look in test categories, records, application, renewal, reference samples, SDWA requirements, enforcement.

Appendices are 49 pages- formerly had to identify each analyte in separate administrative codes for the covered program and guess where it fit in the category structure.

Quality systems is the largest of the subchapters- 24 pages.

On-Site Laboratory Evaluations, our tool for determining compliance, by comparison, is less than 2 pages.

Subchapter I General Provisions

Key Definitions

| | |
|----------------------------|---------------------------|
| Certification | Analytical Instruments |
| Registration | Support Equipment |
| Certification Matrix | Preparation Batch |
| Field of Certification | Analytical Batch |
| Field of Registration | Laboratory Control Sample |
| Analytical Class | Second Source Standard |
| Proficiency Testing Sample | |

Certification - perform analyses for hire in connection with a covered program, or to laboratories that perform drinking water analyses.

Registration - submits data in connection with a covered program that does not perform analyses for hire and that does not perform drinking water analyses.

Certification Matrix - first tier of a field of certification. Certification matrices are drinking water, aqueous, and solids.

Field of Certification - unit by which the department grants or recognizes certification to a laboratory. .

Field of Registration - a unit by which the department grants registration.

Analytical class - a set of analytes of similar behavior or composition, or a set of analytes regulated under the federal safe drinking water act, that is used to organize the third tier of certification or registration.

Proficiency testing sample - "reference samples"

Analytical instruments - any test instrument used to provide analytical results that is not support equipment.

Support equipment - devices that are necessary to support laboratory tests and operations. These devices include autoclaves, balances, ovens, refrigerators, freezers, incubators, water baths, temperature measuring devices, sample preparation devices, and volumetric dispensing devices

Preparation batch - a batch of up to 20 samples, excluding quality control samples, of the same quality system matrix processed in a 24-hour period from the start of the processing of the first sample to the start of the processing of the last sample. A preparation batch may consist of up to 7 samples, excluding quality control, processed during the course of a week in laboratories that do not analyze more than 7 samples for a given test and quality system matrix per week.

Analytical batch - set of any number of prepared samples, or samples requiring no preparatory steps analyzed together as a group in an uninterrupted sequence, and may consist of samples of various quality system matrices.

Laboratory control sample - a sample of an inert matrix fortified with a verified known amount of the analytes of interest, generally used to assess performance

Second source standard - a standard procured from a supplier or manufacturer different from the laboratory's calibration standards, or from a lot verifiably different from the lot of the calibration standards

Subchapter II Program Administration

- Consolidates certification program details
- Recognition of other certifications & registrations
- Certification Standards Review Council
- Enforcement
- Discretionary Acceptance
- Variances

Enforcement changes- elimination of automatic NON for proficiency testing failure, all laboratories treated similarly (criteria for enforcement same for registered and certified laboratories).

Much of this language is unchanged, just reorganized.

Subchapter III Program Structure

Fields of certification and registration

- Certified laboratory- performs analyses for hire in connection with a covered program requiring certification or registration; SDWA
- Registered laboratory- analyses samples and submits data in connection with covered program for itself, does not perform analyses for hire

The new definitions for certified and registered laboratory now clarify which laboratories are eligible for registration and certification.

Statutory requirements for registration include
Not performing tests commercially for hire
AND

Performing tests solely on its own behalf or on behalf of a subsidiary or other corporation under common ownership or control OR
Lab is owned or controlled by a municipality or two or more municipalities and performs tests solely on behalf of the municipality or municipalities

Money changing hands is not the sole difference between certification and registration! The code now defines “commercially for hire” as “offering analyses for remuneration or non-monetary compensation generally available to any party requesting analytical services”, which matches current state statutes.

The proposal now clarifies that all SDWA laboratories need to be certified, even if they do not offer analytical services for hire.

3 Tier Concept

Tier 1- Matrix

- Aqueous- groundwater, wastewater, surface water, biosolids with no more than 15% settleable solids
- Solid- soils, sediments, sludges, and biosolids with greater than 10% settleable solids
- Drinking Water- waters regulated under NR 800 series

Biosolids can be aqueous if the settleable solids are no more than 15%. Overlap is intentional to potentially allow laboratories to analyze biosolids in-house within a single matrix of certification or registration if the laboratory has the capacity to perform these analyses (example might be total solids for landspreading).

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3 Tier Concept

Certification Matrices

- Aqueous
- Solids
- Drinking Water

Registration Matrices

- Aqueous
- Solids

Laboratories can be registered or certified in the aqueous and solid matrix. Laboratories can only be certified in the drinking water matrix.

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Tier 2- Analytical Techniques Aqueous and Solid Matrices

- | | |
|--|---|
| <ul style="list-style-type: none"> ➤ Colorimetric ➤ Combustion or Oxidation ➤ Cold Vapor AA or Gaseous Hydride ➤ Electrometric Assays ➤ Flame AA ➤ GC ➤ GC-MS ➤ Graphite Furnace AA ➤ Gravimetric Assays ➤ HPLC ➤ High Res GC-High Res MS ➤ High Res GC-Low Res MS | <ul style="list-style-type: none"> ➤ ICP ➤ ICP-MS ➤ Ion Chromatography ➤ Liquid Chromatography-MS ➤ Polarography ➤ Titrimetric or Potentiometric Titration Assays ➤ Ultra-Low Level Metals Assays ➤ Voltammetry ➤ Waste Characteristic Extractions ➤ Waste Characterization Assays ➤ Whole Effluent Toxicity Assays ➤ Other |
|--|---|

For the aqueous and solid matrices, the second tier of certification or registration is analytical technique.

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Tier 2- Analytical Methods Drinking Water Matrix

Inorganic Contaminants

EPA 300.0
EPA 200.8
SM 4500-NO₃- D (18/19/20th ed)
SM 3113B (18th/19th ed)
Technicon 380-75WE
ASTM D4327-91
USGS I-3300-85

Organic Contaminants

EPA 504.1
EPA 515.4
EPA 524.2
EPA 525.2
EPA 549.2
SM 6610B (18/19/20th ed)
ASTM D5317-93

For the drinking water matrix, the second tier of certification is analytical method.

Here are some examples of methods offered for certification in the DW matrix; approved methods are listed in Appendix II.

Tier 3 Analytes & Analyte Groups

- BOD
- Carbonaceous BOD
- Ammonia
- Residue, Nonfilterable
- Nitrate
- Sulfate
- Phosphorus, Total
- Cyanide
- Mercury
- Copper
- Lead
- Toxicity Characteristic Leaching Procedure
- Ignitability, Pensky-Martens Closed Cup
- *Ceriodaphnia dubia* Acute Whole Effluent Toxicity Testing

The third tier of registration and certification is analyte or analyte group. The default for the third tier is always analyte, but in some cases the Department will offer analyte groups as a unit of certification or registration. Even when an analyte group is offered, a laboratory may opt to get certified or registered analyte by analyte.

We are also offering certification and registration for pH, residual chlorine, and dissolved oxygen, but there is no requirement to be certified or registered to report results of these analyses to the Department. Laboratories can get certified or registered for these analytes voluntarily.

Tier 3 Analytes & Analyte Groups

- VOCs Analyte Group
- BNA Extractables Analyte Group
- Organochlorine Pesticides Analyte Group
- Atrazine
- Carbofuran
- Famfur
- PCBs as Aroclors Analyte Group
- PAH Analyte Group
- Fluoride
- Lead
- Sodium
- Chlorate
- Haloacetic Acids (five) Analyte Group
- Dibromochloropropane
- 2,3,7,8-TCDD
- Trihalomethanes Analyte Group

Some analyte groups are indicated here.

Analyte group certification or registration would give a laboratory the ability to report a whole suite of similar analytes without having to obtain individual analyte by analyte certification or registration. PTs for analyte groups will be graded on the 80% acceptable results rule.

Analytes available for certification or registration within each analyte group are identified in Appendices I and II.

3 Tier System

Aqueous or Solid Matrix

Analytical Technique

Analyte or Analyte Group

Drinking Water Matrix

Analytical Method

Analyte or Analyte Group

Note that the difference between the two scopes is in the second tier.

Fields of Registration Small WPDES Laboratory

| Current NR 149 | | Proposed NR 149 | |
|------------------------|-------------------------|-------------------------------|-------------------------|
| | | <i>Aqueous Matrix</i> | |
| Category | Analyte | Analytical Technique | Analyte |
| 01- Oxygen Utilization | BOD Carbonaceous BOD | Electrometric Assays | BOD Carbonaceous BOD |
| 02- Nitrogen | Ammonia as N | Electrometric Assays | Ammonia |
| 03- Phosphorus | Total Phosphorus | Colorimetric or Nephelometric | Phosphorus, Total |
| 04- Physical | TSS | Gravimetric Assays | Residue, Non-filterable |

New certificates will look different than the current ones, but the new format will more accurately reflect the analytical capabilities of a laboratory. For instance, we can see from the new structure that this laboratory analyzes ammonia using an ion selective electrode and phosphorus using a spectrophotometer.

Current Scope Small WPDES Laboratory

Category 01 – Oxygen Utilization

Biochemical Oxygen Demand
Carbonaceous BOD

Category 02 – Nitrogen

Ammonia as N

Category 03 – Phosphorus

Total Phosphorus

Category 04 – Physical

Total Suspended Solids

This current scope is sent to the laboratory as an attachment to the actual “certificate”.

This laboratory maintains registration for BOD, CBOD, Ammonia, Total Phosphorus and TSS.

Post-Revision Scope Small WPDES Laboratory

Aqueous Matrix

Electrometric Assays

Biochemical Oxygen Demand
Carbonaceous BOD
Ammonia

Colorimetric or Nephelometric

Phosphorus, Total

Gravimetric Assays

Residue, Nonfilterable

The post-revision scope identifies the matrix (aqueous), analytical techniques (electrometric assays, colorimetric or nephelometric, and gravimetric assays) and the corresponding analytes for which this laboratory maintains registration.

Fields of Certification Small SDWA Laboratory

| Current NR 149 | Proposed NR 149 | |
|---|--|----------|
| Category 18- Safe Drinking Water | <i>Drinking Water Matrix</i> | |
| | Analytical Method | Analyte |
| Fluoride- EPA 300.0 | EPA 300.0 | Fluoride |
| Nitrate- SM 4500-NO ₃ D, SM 20 th ed. | 4500-NO ₃ D, SM 20 th ed | Nitrate |
| Copper- SM 3111B, 18/19 th ed. | SM 3111B, 18/19 th ed. | Copper |
| Lead- SM 3113B, 18/19 th ed. | SM 3113B, 18/19 th ed. | Lead |

For SDWA certification, the new scopes are not very different from the old ones. We are currently capturing method information for SDWA laboratories. The order of the information is reversed in the new scope.

Current Scope Small SDWA Laboratory

Category 18- Safe Drinking Water

Fluoride- EPA 300.0
 Nitrate- SM 4500-NO₃ D, SM 20th ed.
 Copper- SM 3111B, 18/19th ed.
 Lead- SM 3113B, 18/19th ed.

Post-Revision Scope Small SDWA Laboratory

Drinking Water Matrix

EPA 300.0- Fluoride
 SM 4500-NO₃ D, SM 20th ed.- Nitrate
 SM 3111B, 18/19th ed.- Copper
 SM 3113B, 18/19th ed.- Lead

The only difference between the current and post-revision scopes for certification in the drinking water matrix is the order of analytical method and analyte.

**Fields of Certification
WPDES Pretreatment Program**

| Current NR 149 | | Proposed NR 149 | |
|----------------|--|-------------------------------|--|
| Category | | Analyte | |
| Analyte | | Analytical Technique | |
| 04- Physical | Oil & Grease, HEM | Gravimetric | Oil & Grease as HEM |
| 06- General II | Cyanide | Colorimetric or Nephelometric | Cyanide |
| 08- Metals I | Cadmium Chromium, Total Copper Lead Nickel Silver Zinc | Flame AA ICP | Copper Nickel Zinc Cadmium Chromium, Total Silver |

In this example, this wastewater treatment plant laboratory opted for certification voluntarily.

This laboratory maintains certifications for BOD, Ammonia, Total Phosphorus and Solids (TSS, TS, and TVSS) to comply with its own permit requirements.

The other tests in this example are required as a result of a local pretreatment ordinance- the plant uses this data for billing pretreatment program participants. The ordinance requires pre-treatment analyses to be performed by a certified or registered laboratory.

**Current Scope
WPDES w/ Pretreatment**

- Category 04- Physical
 - Oil & Grease (HEM)
- Category 06- General II
 - Cyanide
- Category 08- Metals I
 - Cadmium
 - Copper
 - Chromium, Total
 - Lead
 - Nickel
 - Zinc

**Post-Revision Scope
WPDES w/ Pretreatment**

- Aqueous Matrix
 - Colorimetric or Nephelometric
 - Cyanide
- Gravimetric Assays
 - Oil & Grease as HEM
- Flame AA
 - Copper
 - Nickel
 - Zinc
- ICP
 - Cadmium
 - Chromium, Total
 - Lead

This example clearly indicates the technique used for the metals determinations; this information would not be obvious in the current scope.

Fields of Certification Commercial Lab Pesticides

| Current NR 149 | | Proposed NR 149 | |
|---------------------------------|--|-----------------------|---|
| | | <i>Aqueous Matrix</i> | |
| Category | Analyte | Analytical Technique | Analyte |
| 13- Liquid Chromatography | Carbamates | HPLC | Aldicarb Barban |
| 14- Pesticides | Organophosphorus Pesticides Triazines & Metabolites | GC GC | Dimethoate Famfur Atrazine Cyanazine Simazine |
| 16- Organics; Organochlorine | Organochlorine Pesticides | GC-MS | Organochlorine Pesticides Analyte Group |
| | | GC | Organochlorine Pesticides Analyte Group |
| 19- Any Single Analyte | 2,4,5-T 2,4,5-TP | LC-MS | 2,4,5-T 2,4,5-TP |

This is an example of a commercial laboratory that analyzes some common and some unusual pesticides.

Fields of Certification Commercial Lab Pesticides

| Organochlorine Pesticides Analyte Group | | |
|---|--------------------|--------------------|
| Aldrin | 4,4'-DDE | Heptachlor Epoxide |
| alpha-BHC | 4,4'-DDT | Isodrin |
| beta-BHC | Dichloran | Kepone |
| delta-BHC | Dieldrin | Methoxychlor |
| gamma-BHC | Endosulfan I | Mirex |
| Captafol | Endosulfan II | PCNB |
| Captan | Endosulfan Sulfate | Perthane |
| Chlordane | Endrin | Strobane |
| Chloroneb | Endrin Aldehyde | Toxaphene |
| 4,4'-DDD | Heptachlor | |

The organochlorine pesticides analyte group includes all the pesticides listed on this slide.

Fields of Certification Commercial Lab Pesticides

| Current NR 149 | | Proposed NR 149 | |
|---------------------------------|--|----------------------|--|
| | | <i>Solids Matrix</i> | |
| Category | Analyte | Analytical Technique | Analyte |
| 14- Pesticides | Organophosphorus Pesticides Triazines & Metabolites | GC | Chlordane Toxaphene |
| 16- Organics; Organochlorine | Organochlorine Pesticides | GC-MS | Organochlorine Pesticides Analyte Group Dimethoate Famfur Atrazine Cyanazine Simazine |

Current Scope Commercial Lab Pesticides

Category 13- Liquid Chromatography

Carbamates

Category 14- Pesticides

Organophosphorus

Triazines and Metabolites

Category 16- Organics; Organochlorines

Organochlorine Pesticides

Post-Revision Scope Commercial Lab Pesticides

Aqueous Matrix

GC-MS

Organochlorine Pesticides
Analyte Group

GC

Organochlorine Pesticides
Analyte Group
Dimethoate
Famfur
Atrazine
Cyanazine
Simazine

HPLC

Aldicarb
Barban

LC-MS

2,4,5-T
2,4,5-TP

Solids Matrix

GC

Chordane
Toxaphene

GC-MS

Organochlorine Pesticides
Analyte Group
Dimethoate
Famfur
Atrazine
Cyanazine
Simazine

The new scope indicates the techniques used to analyze each pesticide under certification. It also allows laboratories to tailor their scopes to the analytes requested for individual matrices. Note the differences between the analytes and techniques for the aqueous and solids matrices.

Analyte Classes Aqueous & Solids

Inorganics

- Demand
- Nutrients
- Wet Chemistry
- Metals
- Physical
- Other

Organics

- BNA Extractables
- PCBs as Arochlors
- PCBs as Congeners
- Petroleum Hydrocarbons
- Pesticides and Metabolites
- Polynuclear Aromatic Hydrocarbons
- PCDDs and PCDFs
- Volatile Organic Compounds
- Other

Analytical classes organize all the possible analytes for which laboratories can obtain certification or registration in the aqueous and solids matrices into "affinity" sets. Analytical classes are also used to develop fee assessments.

Analytical classes mirror those used by PT providers. *Some* classes match the current test category structure:

Demand BOD, COD, TOC

Physical Filterable Residue, Nonfilterable Residue, Oil & Grease, HEM

Nutrients Ammonia, TKN, Nitrate, Nitrite, Total Phosphorus

Wet Chemistry Chloride, Total Residual Chlorine, Cyanide, Fluoride, Sulfate

Base, Neutral and Acid Extractables Aldehydes & Ketones, Benzidines, Chlorinated Hydrocarbons, Explosive Residues, Haloethers, Nitroaromatics, Nitrosamines, Nonhalogenated Organics, Phenols, Phthalate Esters

Pesticides and metabolites Acid Herbicides, Nitrogen, N-Methyl Carbamates and Substituted Ureas, Organochlorine, Organophosphorus, Triazines, Pesticides not otherwise specified
Petroleum Hydrocarbons DRO, GRO, PVOCs

Analyte Classes Drinking Water

- Disinfection Byproducts
- Primary Inorganic Contaminants
- Secondary Contaminants
- Synthetic Organic Contaminants
- Trihalomethanes
- Volatile Organic Compounds

Similarly, analytical classes for the drinking water certification matrix organize analytes into “affinity” sets by type of drinking water contaminant.

Subchapter IV Certification & Registration Process

Applications

- Initial
- Revised
- Transfer of certifications or registrations
- Reciprocity
- Renewal

Relocation

Laboratory Name Change

This subchapter is where laboratories would go to obtain information on how to apply to the program and how much it would cost to obtain or maintain certification and registration.

Applications

Initial – a complete inventory of analytes and analytical techniques for which a laboratory seeks certification or registration. At the time the revision become effective, a shortened version of an initial application will be required of all laboratories.

Revised – not much change from the current practices; used for minor changes

Transfer of certification or registration – used when the Department determines that existing certifications or registrations can be transferred to a new owner; otherwise, an initial application is required.

Renewal – annual application to update contacts and inform of changes in personnel, methods within a certified or registered technique, or laboratory equipment; will be electronic and if no changes have occurred, will be a pass through. There is no fee assessed for the annual renewal application.

The Code now outlines a process that laboratories need to follow when they move. The Department may perform an on-site evaluation at the new location.

Laboratories that change their name without a change in ownership or scope of certification or registration will be issued a new certificate at no cost.

We are catching up with rest of DNR with electronic reporting (EDMR, CMAR, DW) and plan to automate the application process electronically as much as possible.

Drinking Water Laboratory Requirements

- EPA "Manual for the Certification of Laboratories Analyzing Drinking Water" 5th ed.
- No provisional or interim certification
- Method Detection Limit requirements
- Exclusions
- MCL exceedance notification

Water supply facilities monitoring disinfectant and fluoride remain exempted from certification requirements. These facilities may get certified for pH, free chlorine and total chlorine residual, and turbidity voluntarily.

Fees

Annual Spending Authority set by DOA

No increase in staffing

Fee formula unchanged

More equitable distribution of RVUs

RVUs are relative value units. The number of RVUs assigned to a technique, application, or class is directly related to the complexity of the task or the anticipated effort necessary to review any of them during an evaluation. This is not a new concept. Currently, fees are assessed on the same principle.

Because of the way the new scopes of certification and registration have been constructed, there are more number of RVUs available to recover program costs. More RVUs for the entire program means that the cost of an RVU will be lower.

Our projections show that fees will not change significantly for most laboratories. Some laboratories will see slight decreases in their fees and some small drinking water laboratories may experience more substantial decreases.

Proposed Annual Fees Aqueous & Solid Matrices

Base Fees

- Certification: 10 RVU
- Registration: 5 RVU
- Minimum Annual Certification Fee: 24 RVU

Matrix Fees

- Aqueous: 5 RVU
- Drinking Water: 5 RVU
- Solids: 5 RVU

Analytical Technique Fees

Matrix fees are now assessed under the new proposal. However the sum of the base fee and matrix fee for a laboratory certified or registered for a single matrix under the proposal exactly equals the current base fees for certification and registration.

The program will continue to assess a minimum annual certification fee but now includes exemptions from the fee for certified laboratories analyzing a set of typical wastewater analytes and those analyzing a set of conventional drinking water contaminants.

The proposal, as is also the case with the current code, does not assess a minimum fee to any registered laboratory.

Proposed Annual Fees Drinking Water Matrix

Base Fees

- Certification: 10 RVU
- Minimum Annual Certification Fee: 24 RVU

Matrix Fees

- Drinking Water: 5 RVU

Analyte Class Fees

Drinking water laboratories that analyze nitrate, nitrite, fluoride, lead, and copper will not be assessed a minimum fee.

Analytical Technique Fees Aqueous & Solid Matrices

| Analytical Technique | RVU |
|---|-----|
| Colorimetric or Nephelometric Spectrophotometry | 2 |
| Combustion or Oxidation | 3 |
| Electrometric Assays | 1 |
| Gravimetric Assays, Residues | 1 |
| Gravimetric Assays, Oil and Grease | 1 |
| Ion Chromatography | 3 |
| Titrimetric or Potentiometric Titration Assays | 1 |

Fees are assessed by analytical technique for the aqueous and solid matrices. Within a certified or registered analytical technique, a laboratory can add any analytes appropriate for the technique without having to pay additional fees.

The number of RVUs assigned to a technique is based on the complexity of the analytical technique. The specific values assigned were based on a survey that asked RAC members and laboratory certification program staff to rate the relative complexity of analytical techniques.

Analytical Technique Fees Aqueous & Solid Matrices

| | |
|---|---|
| Cold Vapor Atomic Absorption or Gaseous Hydride Spectrophotometry | 3 |
| Flame Atomic Absorption Spectrophotometry | 3 |
| Graphite Furnace Atomic Absorption Spectrophotometry | 3 |
| Inductively Coupled Plasma Emission Spectrophotometry | 3 |
| Inductively Coupled Plasma-Mass Spectrometry | 4 |
| Polarography | 1 |
| Ultra-Low Level Metals Assays | 5 |
| Voltammetry | 1 |
| Waste Characteristic Extractions | 1 |
| Waste Characterization Assays | 1 |
| Whole Effluent Toxicity Assays | 5 |

This shows that evaluating ICP-MS is more difficult than evaluating ICP.

Evaluating whole effluent toxicity assays could be considered five times more complex than evaluating flash point analyses (waste characterization assays).

Analytical Technique Fees Aqueous & Solid Matrices

| | |
|--|------------------|
| Gas Chromatography | 3 |
| Gas Chromatography-Mass Spectrometry | 4 |
| High Performance Liquid Chromatography | 4 |
| High Resolution GC-High Resolution Mass Spectrometry | 10 |
| High Resolution GC-Low Resolution Mass Spectrometry | 10 |
| Liquid Chromatography-Mass Spectrometry | 5 |
| Other | Not to exceed 10 |

This shows that the most complex techniques to evaluate are currently the analyses associated with dioxin, furan, and PCB congener (high resolution GC-high resolution MS and high resolution GC-low resolution MS).

“Other” techniques might include something like immunoassay, if used for quantitation.

Analytical Class Fees Drinking Water Matrix

| Analytical Class | RVU |
|--|-----|
| Copper and Lead Only | 4 |
| Dioxin | 10 |
| Disinfection Byproducts | 4 |
| Nitrate, Nitrite, Nitrate + Nitrite, and Fluoride Only | 2 |
| Primary Inorganic Contaminants | 8 |
| Secondary Inorganic Contaminants | 4 |
| Synthetic Organic Contaminants | 8 |
| Volatile Organic Compounds and Trihalomethanes | 4 |

Analytical classes are used to assess fees for laboratories certified in the drinking water matrix. The analytical class fees reflect groupings set by EPA and the Department's NR 809.

We added smaller subsets of analytes to limit fees for laboratories analyzing a restricted number of analytes such as lead and copper, nitrate, nitrite and fluoride.

Currently, a drinking water laboratory analyzing anything other than nitrate and fluoride has to pay the full 20 RVU fee for drinking water testing, while a specialty laboratory analyzing dioxin would pay the same 20 RVU fee.

Even with these changes certification fees for drinking water in Wisconsin will be significantly lower than the fees assessed by other states.

Fees Small WPDES Laboratory

| Current Fees | RVU |
|---------------------------------|-----------|
| Registration Base Fee | 10 |
| Category 01- Oxygen Utilization | 1 |
| Category 02- Nitrogen | 1 |
| Category 03- Phosphorus | 1 |
| Category 04- Physical | 1 |
| Total: | 14 |
| Proposed Fees | RVU |
| Base Fee, Registration | 5 |
| Matrix Fee, Aqueous | 5 |
| Technology Fees: | |
| Colorimetric or Nephelometric | 2 |
| Electrometric Assays | 1 |
| Gravimetric Assays | 1 |
| Total: | 14 |

Note that the RVUs for a typical small wastewater treatment plant laboratory are not increasing as a result of this proposal.

Fees

Small SDWA Laboratory

| Current Fees | RVU |
|--|-----------|
| Certification Base Fee | 15 |
| Category 18- Safe Drinking Water | 20 |
| Total: | 35 |
| Proposed Fees | RVU |
| Base Fee, Certification | 10 |
| Matrix Fee, Drinking Water | 5 |
| Analytical Class Fees: | |
| Copper and Lead | 4 |
| Nitrate, Nitrite, Nitrate + Nitrite and Fluoride | 2 |
| Total: | 21 |

Note that this small SDWA laboratory will experience a drop in assessed RVUs. This laboratory is exempted from paying the minimum certification fee. The assessed 21 RVUs are lower than the minimum certification fee of 24 RVUs.

Fees

WPDES w/ Pretreatment

| Current Fees | RVU |
|---|-----------|
| Certification Base Fee | 15 |
| Category 04- Physical | 1 |
| Category 06- General II | 2 |
| Category 08- Metals | 4 |
| Total: | 22 |
| Proposed Fees | RVU |
| Base Fee, Certification | 10 |
| Matrix Fee, Aqueous | 5 |
| Technology Fees, Aqueous Matrix: | |
| Colorimetric or Nephelometric Assays | 2 |
| Gravimetric Assays, Oil & Grease | 1 |
| Flame Atomic Absorption Spectrophotometry | 3 |
| ICP | 3 |
| Total | 24 |

This is the same wastewater treatment laboratory that voluntarily opted for certification.

In this case, the laboratory will see a slight increase of 2 RVUs under the proposed code. Should the laboratory decide to become registered, the RVUs assessed to the laboratory would decrease by 5 for a total of 19 RVUs.

Fees

Commercial Pesticides Only

| Current Fees | RVU |
|---------------------------------------|-----------|
| Certification Base Fee | 15 |
| Category 13- Liquid Chromatography | 4 |
| Category 14- Pesticides | 4 |
| Category 16- Organochlorine Compounds | 4 |
| Category 19- Any Single Analyte | 4 |
| Total: | 31 |
| Proposed Fees | RVU |
| Base Fee, Certification | 10 |
| Matrix Fee, Aqueous | 5 |
| Matrix Fee, Solids | 5 |

Fees

Commercial Pesticides Only

| Proposed Fees, continued | |
|---|-----------|
| Technology Fees, Aqueous Matrix: | |
| HPLC | 4 |
| Gas Chromatography | 3 |
| Gas Chromatography-Mass Spectrometry | 4 |
| Liquid Chromatography-Mass Spectrometry | 5 |
| Technology Fees, Solids Matrix | |
| Gas Chromatography | 3 |
| Gas Chromatography-Mass Spectrometry | 4 |
| Total: | 43 |

This laboratory will experience an increase in assessed RVUs.

The sum of all the RVUs for pesticide analytical classes is 16, which is right at the cap for maximum fees that can be assessed for certification or registration for pesticides. If the laboratory added another analytical techniques for pesticides, the laboratory would not be assessed any additional fees. For example, if the laboratory opted to obtain certification for immunoassay atrazine, it would pay no additional fee.

Proposed Application Fees

| Type | Current | Proposal |
|-----------------------|---------|----------|
| Initial | 6 | 6 |
| Revised | 3 | 3 |
| Reciprocity | 30 * | 4 |
| Transfer of Ownership | 4 | 4 |

* Flat fee includes application and certification

Laboratories applying for certification or registration through reciprocity would pay an application fee equal to 4 RVUs and the RVUs associated with the matrices, techniques, or methods for which they seek certification or registration. Reciprocity laboratories currently are assessed a flat fee of 30 RVUs regardless of what their certification or registration scope is.

The proposal does not change the fees for other types of applications.

There is no fee for the annual renewal application.

Proposed Administrative Fees

| Type | Currently | Proposal |
|--------------------------------------|-------------|-------------|
| Discretionary Acceptance | Actual Cost | Actual Cost |
| Evaluation Cancellation | | Incurred |
| Evaluation for Enforcement Follow-Up | Actual Cost | Actual Cost |
| Evaluation of Out-of-State Labs | Actual Cost | Actual Cost |
| Late Renewal Fee | 2 | 2 |

The code proposal allows us to recover any incurred costs for cancelled out of state audits.

Maximum Fees Aqueous and Solids Matrices

| Analytical Classes | Maximum RVU |
|---|-------------|
| Physical | 2 |
| Demand | 3 |
| Metals, other than Ultra-Low Level Analysis | 10 |
| Nutrients | 5 |
| Wet Chemistry | 10 |

The proposal establishes maximum fees for analytical classes in the aqueous and solid matrices. The maximum fees establish a cap for the fees that the Department can assess laboratories for any combination of techniques used to determine analytes within the class.

The maximum fee also keeps in control the fees a laboratory would pay for determining the same analyte or the same class of analytes, for example metals, by different analytical techniques.

For example, a laboratory wishing to analyze metals by flame AA, graphite furnace AA, ICP, and ICP-MS would not be assessed the sum of the RVUs for these techniques: $3 + 3 + 3 + 4 = 13$. Instead, the laboratory would pay 10 RVUs, the maximum fee for the metals analytical class.

Maximum Fees Aqueous and Solids Matrices

| | |
|--|----|
| BNA-Extractable Semivolatile Compounds | 10 |
| Pesticides | 16 |
| Petroleum Hydrocarbons | 10 |
| Polynuclear Aromatic Hydrocarbons | 8 |
| Polychlorinated Biphenyls as Aroclors | 4 |
| Polychlorinated Biphenyl Congeners | 8 |
| Polychlorinated Dibenzo-p-Dioxins and Furans | 10 |
| Volatile Organic Compounds | 8 |

In summary, the maximum fee for analytical classes control the fees assessed to laboratories that opt to get certified or registered for multiple techniques for the same class of analytes.

Example Maximum Fees Multiple Techniques for Metals

| Current | | | Proposed | | |
|------------------------|---|-----|----------------|-----------|-----|
| | | RVU | Aqueous Matrix | | RVU |
| Category 08- Metals I | Arsenic Selenium Lead Copper Mercury Chromium Magnesium | 4 | CVAA FLAA | Mercury | 3 |
| | | | | Copper | 3 |
| | | | GFAA | Magnesium | |
| | | | | Zinc | |
| | | | ICP | Arsenic | 3 |
| | | | | Selenium | |
| | | | ICP-MS | Chromium | |
| | | | | Copper | 3 |
| | | | | Lead | |
| | | | | Magnesium | |
| | Arsenic | | | | |
| | Chromium | 4 | | | |
| | Lead | | | | |
| | Selenium | | | | |
| Titanium | | | | | |
| Category 09- Metals II | Titanium | 4 | | | |
| | Total | 8 | | Total | 16 |

The illustrates how the maximum fee for the metals analytical class would save this laboratory the cost of 6 RVUs when getting registered or certified in the aqueous matrix for multiple techniques to analyze metals.

RVU exceeds maximum for metals analyte class-
lab pays maximum 10 RVU for aqueous matrix

Example Metals Maximum Fee

| Current | | | Proposed | | |
|------------------------|---|-----|---------------|-----------|-----|
| | | RVU | Solids Matrix | | RVU |
| Category 08- Metals I | Arsenic Selenium Lead Copper Mercury Chromium Magnesium | 4 | CVAA | Mercury | 3 |
| | | | FLAA | Copper | 3 |
| | | | ICP | Magnesium | |
| | | | | Zinc | |
| | | | ICP-MS | Chromium | 3 |
| | | | | Copper | |
| | | | | Lead | |
| | | | | Magnesium | |
| | | | | Arsenic | 4 |
| | | | | Chromium | |
| | | | | Lead | |
| | | | | Selenium | |
| | | | | Titanium | |
| Category 09- Metals II | Titanium | 4 | | | |
| Total | | 8 | | Total | 13 |

RVU exceeds maximum for metals analyte class-
lab pays maximum 10 RVU for solids matrix as well

The illustrates how the maximum analytical class fee would save this laboratory 3 RVUs when getting certified or registered in the solid matrix for multiple techniques for analyzing metals.

Subchapter V Proficiency Testing

- Time frame for analysis: 9/1 to 8/15
- Annual list of available PTs published by WDNR
- Key analytes are gone, now analyte by analyte
- Kept it simple for multiple techniques

The proposal allows laboratories to analyze a PT from September 1 to August 15 of the following year to qualify for renewal of certifications and registrations.

The current proposal does not use key analytes, but allows laboratories to use the same PT for multiple analytical techniques for analytes or analyte groups in the aqueous matrix.

Laboratories may use the same PT for multiple methods for analytes or analyte groups in the drinking water matrix.

PTs are required to undergo the preparatory steps of the analytical procedures performed at the laboratory.

Exemptions for Proficiency Testing

Analytical Techniques for Metals

- FLAA
- Colorimetric, other than Hexavalent Chromium
- Concentrations inappropriate for ultra low level metals

Unavailability

- Lack of approved providers
- Lack of analyte availability

Proficiency testing for solids is evolving

These metals techniques are exempted from PTs in the code proposal because the concentrations of available PTs are inappropriate for the technique and would either be non-detectable (ppb concentrations for FLAME) or would require extraordinary dilution (low-level mercury).

PTs for pesticides historically have been problematic either because they contain a limited suite of pesticides or are not representative of the types of pesticides used in Wisconsin.

Laboratories must still be able to demonstrate their ability to analyze analytes exempted from the PT requirement by analyzing quality control samples.

There is very limited availability of PTs for solids and the Department is not likely to require their analysis at this time.

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Aqueous Matrix Proficiency Testing Failure



Analyze second PT sample

Failure PT #2

- Submit corrective action report
- Initiate action plan
- Analyze third proficiency testing sample

Failure PT #3

- Will not be renewed, unless
- Analyze & pass 2 successive PTs

The proposal eliminates the automatic enforcement for multiple proficiency testing failures for certification or registration in the aqueous matrix. Instead of receiving a Notice of Noncompliance (NON), laboratories will not be renewed for the affected techniques, unless they pass the third PT.

Laboratories that fail the third PT, must successfully analyze 2 consecutive PTs.

Note that in the language style used for administrative codes, “may not” is the opposite of “shall”. The “Department may not” means “the Department will not”.

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Drinking Water Matrix Proficiency Testing Failure



Analyze second PT sample

- May require corrective action

Failure of PT #2

- Issuance of Notice of Violation
- Will not renew certification
- May revoke certification

For the drinking water matrix, laboratories that fail two PTs will not have their certification renewed and are subject to revocation for the affected method and analyte.

A Notice of Violation (NOV) is likely to advise the laboratory about the possible revocation may include analyzing two consecutive PTs successfully, as is current practice.

Required PTs Small WPDES Laboratory

Aqueous Matrix

Electrometric Assays

| | |
|---------------------------|----|
| Biochemical Oxygen Demand | WP |
| Carbonaceous BOD | WP |
| Ammonia | WP |

Colorimetric or Nephelometric

| | |
|-------------------|----|
| Phosphorus, Total | WP |
|-------------------|----|

Gravimetric Assays

| | |
|------------------------|----|
| Residue, Nonfilterable | WP |
|------------------------|----|

This identifies the commonly available types of PT for the listed analytical techniques. To obtain certification for CBOD laboratories will now have to analyze a PT. However, the same PT that is analyzed for BOD can be also analyzed for CBOD.

Using key analytes created some confusion and made some laboratories analyze for a test they never would perform just to obtain certification or registration for a different analyte in the same test category, as for example, when a laboratory had to analyze a hardness sample to obtain certification or registration for bromide. The code proposal establishes a more direct link between certified and registered analytes and PTs.

Required PTs Small SDWA Laboratory

Drinking Water Matrix

| | |
|---|----|
| EPA 300.0- Fluoride | WS |
| SM 4500-NO ₃ D, SM 20 th ed.- Nitrate | WS |
| SM 3111B, 18/19 th ed.- Copper | WS |
| SM 3113B, 18/19 th ed.- Lead | WS |

PTs for the drinking water matrix are analyzed by method, and come from the WS series offered by most providers, as is currently the case.

Required PTs WPDES w/ Pretreatment

Aqueous Matrix

Colorimetric or Nephelometric

| | |
|---------|----|
| Cyanide | WP |
|---------|----|

Gravimetric Assays

| | |
|---------------------|----|
| Oil & Grease as HEM | WP |
|---------------------|----|

Flame AA

| | |
|--------|------------------|
| Copper | Technique Exempt |
| Nickel | Technique Exempt |
| Zinc | Technique Exempt |

ICP

| | |
|-----------------|----|
| Cadmium | WP |
| Chromium, Total | WP |
| Lead | WP |

This shows the current PT exemptions proposed for flame AA.

**Required PTs
Commercial Pesticides**

Aqueous Matrix

| | | |
|-------|--|-----|
| GC-MS | Organochlorine Pesticides Analyte Group | WP |
| GC | Organochlorine Pesticides Analyte Group | WP |
| | Dimethoate | ? |
| | Famfur | ? |
| | Atrazine | WS? |
| | Cyanazine | WS? |
| | Simazine | WS? |
| HPLC | Aldicarb | WS? |
| | Barban | ? |
| LC-MS | 2,4,5-T | WS? |
| | 2,4,5-TP | WS? |

Solids Matrix

| | |
|-------|--|
| GC-MS | Organochlorine Pesticides Analyte Group |
| | Dimethoate |
| | Famfur |
| | Atrazine |
| | Cyanazine |
| | Simazine |
| GC | Chlordane |
| | Toxaphene |

None

PTs for organochlorine pesticides are readily available, but that is not necessarily the case for herbicides, carbamates, organophosphorus pesticides and trazines.

Providers have historically re-labeled WS ampules for WP herbicides but only included four herbicides in the ampules. This illustrates the current uncertainty about the availability of PTs for some pesticides in the aqueous matrix and most pesticides in the solid matrix. This is one reason why the proposal calls for publishing a list of required PTs and approved providers annually.

**Subchapter VI
On-Site Evaluations**

- 3-year interval
- Laboratory relocation can trigger audit
- Specifies timeframes for WDNR and laboratory responses
- Conflict of interest

This is the shortest subchapter in the proposed code.

The frequency of on-site evaluations remains the same. The proposal specifies deadlines the Department will meet to issue reports and close open cases and requires the Department to establish procedures to prevent conflicts of interest for evaluators assigned to participating laboratories.

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Feel free to contact any of us with your questions about this presentation or the proposed revision to Chapter NR 149.